DOCUMENT RESUME

ED 275 770 TM 860 688

AUTHOR	Keefe, James W.; Monk, John S.
TITLE	Learning Style Profile: Examiner's Manual.
INSTITUTION	National Association of Secondary School Principals, Reston, Va.
PUB DATE	86
NOTE	28p.; For a related document, see TM 860 687.
AVAILABLE FROM	National Association of Secondary School Principals, 1904 Association Drive, Reston, VA 22091 ($3.00, plus $2.00 shipping).
PUB TYPE	Guides - Non-Classroom Use (055)
EDRS PRICE	MF01 Plus Postage. PC Not Available from EDRS.
DESCRIPTORS	*Cognitive Measurement; Cognitive Processes; *Cognitive Style; *Cognitive Tests; Concurrent Validity; Educational Testing; Elementary Secondary Education; *Factor Structure; Learning Strategies; Scoring Formulas; *Test Construction; Test Interpretation; Test Manuals; Test Norms; Test Reliability; *Test Validity
IDENTIFIERS	Edmonds Learning Style Identification Exercise; Group Embedded Figures Test (Witkin); Learning Style Inventory; *Learning Style Profile

ABSTRACT

This examiner's manual accompanies the Learning Style Profile (LSP), which measures cognitive skills as well as affective and environmental preferences. Charles Letteri's General Operations Model was accepted as the prototype for relating learning styles to cognitive information processing. The LSP was developed from 1983 to 1986; several versions were administered and factor analyzed. The final draft of 126 items was administered to a national normative sample of 5,154 students in grades 6 to 12. Results of test reliability studies were acceptable for a test of this length. Concurrent validity was examined using the Group Embedded Figures Test, the Edmonds Learning Style Identification Exercise, and the Learning Style Inventory. Results were generally acceptable, as were indications of face, content, and construct validity. Factor analysis resulted in 23 scales: analytic, spatial, discrimination, categorizing, sequential processing, and memory skill; visual, auditory, and emotive perceptual response; persistence and verbal risk orientation; verbal-spatial, manipulative, grouping, posture, mobility, sound, lighting, and temperature preference; and study time preference (early morning, late morning, afternoon, or evening). This manual contains directions for administering the test; scoring and interpreting instructions; normative data; terms of use; and order forms. (GDC)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED275770

NATIONAL ASSOCIATION OF SECONDARY SCHOOL PRINCIPALS

LEARNING STYLE PROFILE

Examiner's Manual

"PERMISSION TO REPRODUCE THIS MATERIAL IN MICROFICHE ONLY HAS BEEN GRANTED BY

T. Koerner

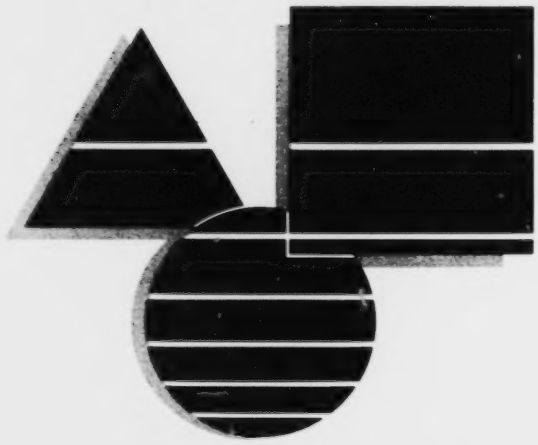
TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

X This document has been reproduced as received from the person or organization originating it.

☐ Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.



James W. Keefe and John S. Monk

TM 860 688

Published by the National Association of Secondary School Principals, 1904 Association Drive, Reston, Va. 22091. Copyright © 1986. All Rights Reserved. Printed in the U.S.A. No part of this publication may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording, or otherwise, without the prior written permission of the publisher.

BEST COPY AVAILABLE

Learning Styles Task Force

Dr. David P. Cavanaugh
Educational Consultant
Worthington, Ohio
Specialty: School level implementation

Dr. John K. DiTiberio
Office of Human Development
St. Louis University
St. Louis, Missouri
Specialty: Myers-Briggs Type Indicator

Dr. Rita Dunn
School of Education and Human Services
St. John's University
Jamaica, New York
Specialty: Affective and environmental styles

Dr. Barbara Ferrell
Dept. of Psychology and Philosophy
Texas Woman's University
Houston, Texas
Specialty: Learning style factor analysis

Dr. Marlin Languis
Academic Faculty of Early and Middle Childhood Education
The Ohio State University
Columbus, Ohio
Specialty: Brain behavior analysis

Dr. Charles A. Letteri
Center for Cognitive Studies
University of Vermont
Burlington, Vermont
Specialty: Cognitive styles

Dr. Penelope Peterson
Dept. of Educational Psychology
University of Wisconsin-Madison
Madison, Wisconsin
Specialty: Aptitude-treatment interaction analysis

Dr. Royce Ronning
Dept. of Educational Psychology
University of Nebraska
Lincoln, Nebraska
Specialty: Cognitive styles

Dr. John S. Monk
Dept. of Family Medicine
The Ohio State University
Columbus, Ohio
Project Evaluation Coordinator

Dr. James W. Keefe
Director of Research
NASSP
Reston, Virginia
Task Force Chairman

Contents

		Page
Section 1:	Description of the Learning Style Profile	1
	Background Information	1
	National Task Force	1
	Instrument Development	2
	Instrument Validation	2
	Instrument Reliability	2
	Instrument Validity	3
	Scale Descriptions	5
	Use of the Instrument	6
Section 2:	Directions for Administering the Learning Style Profile	7
	Before the Administration	7
	Materials Needed	7
	Directions	7
	During the Administration	9
	After the Administration	9
Section 3:	Scoring and Interpreting the Learning Style Profile	10
	Machine Scoring	10
	Hand Scoring	10
	Completing a Student Profile	12
	Interpreting the Profile	12
	Instructional Implications	15
Section 4:	Normative Sample and Data	16
	The Sample	16
	Normative Table	16
Section 5:	Terms of Use	20
	Copyright	20
	Permissions	20
	Qualifications for Purchase	20
Appendix:	Examiner's Comment Sheet	21
	Student/Class Profile Form	
	LSP Order Form	

Section 1: Description of the Learning Style Profile

Background Information

Diagnosis is the most neglected function of schooling—the careful assessment of student developmental characteristics, knowledge and skills, and learning style. Of these, learning style is surely the most overlooked element. Yet, learning style assessment opens the door to a more rational plan for schooling. It provides the basis for a more personalized approach to student advisement and placement, to instructional strategy, and to the evaluation of learning.

Learning style research has not been a high priority in the past decade. Educational psychologists maintained interest through the 1960s in the work on cognitive controls that had begun after World War II at Brooklyn College, the Menninger Foundation, and the Fels Institute. But this work foundered when many psychologists concluded that cognitive style research was unproductive or not a defensible independent field of inquiry. Educational practitioners discovered learning style technology at about the time most psychologists were losing interest. The result until recently was slow progress in the field with little university-school collaboration.

National Task Force

The National Association of Secondary School Principals undertook, in 1979, the cosponsorship of a National Learning Styles Network (with St. John's University of New York). The NASSP monograph *Student Learning Style: Diagnosing and Prescribing Programs* was published later that same year to summarize various developing learning style approaches. In 1981, a major conference was sponsored by the Network to bring together many of the leading persons in the field to discuss and exchange information. NASSP issued selected conference papers in the publication, *Student Learning Styles and Brain Behavior: Programs, Instrumentation, Research*.

In late 1982, the NASSP assembled a distinguished task force to examine the concept of learning style. The Learning Styles Task Force spent almost a year documenting the fragmented nature of the field and then set for itself the task of creating a single learning style instrument that would assess a broad spectrum of research-based style elements, be easily administered in the school setting, and be valid and reliable. Learning style elements were classified into cognitive, affective, and physiological/environmental domains. An information processing perspective was adopted as the basis for the Task Force conceptual model of style.

The "General Operations Model" of Charles Letteri (1982) was accepted as the prototype for relating learning styles to information processing. This model views learning as information processing—the storage and retrieval of information. Subject matter is information and must pass through the individual's information processing system to be learned, retained, and recalled. After information is received from the external environment through the senses and stored briefly in perceptual memory, the mind makes a decision (filter system) based on the physical characteristics of an object and/or attitudinal criteria what to do about a given message. It may reject the information, memorize it for short-term recall, transform it to conform to prior messages, or learn it by integrating, assimilating, differentiating, or associating it in working and long-term memory. The end result is a changed cognitive structure for the individual.

Cognitive controls are processes and skills that are prerequisite to learning itself. These cognitive skills, in turn, are influenced by various affective and environmental preferences that the individual brings to learning. The gestalt of cognitive, affective, and environmental elements is what we term learning style.

The NASSP Task Force has defined learning style as "the composite of characteristic cognitive, affective, and physiological factors that serve as relatively stable indicators of how a learner perceives, interacts with, and responds to the learning environment. It is demonstrated in that pattern of behavior and performance by which an individual approaches educational experiences. Its basis lies in the structure of neural organization and personality which both molds and is molded by human development and the learning experiences of home, school, and society." (Keefe and Languis, 1983). This definition incorporates broad categories—cognitive, affective, and physiological—but learning style itself is a *gestalt*. It is a complexus of related characteristics in which the whole is greater than its parts. Learning style combines internal and external operations that are derived from the individual's neurobiology, personality,

and development and that are reflected in learner behavior. Learning style represents both inherited characteristics and environmental influences.

Instrument Development

The national Task Force considered a large number of cognitive/learning style and brain behavior characteristics before establishing a developmental list with operational definitions. During 1983, the Task Force rigorously reviewed the literature, prepared a set of concept papers, and reached consensus on an holistic view of "learning style" as the umbrella concept and some 40-50 elements to be investigated. The Task Force agreed that a new learning style instrument should be developed that would reflect the best of current research—a state-of-the-art assessment tool.

The *Learning Style Profile* (LSP) was developed in four phases from the fall of 1983 to early 1986. Three University Centers (Vermont, Ohio State, St. John's) developed and piloted 424 items in three domains. During the spring of 1984, separate cognitive, affective, and environmental instruments were administered regionally and an initial exploratory factor analysis conducted. The Task Force carefully reviewed these data and prepared a first draft of the unified *Profile*. Three forms consisting of 280 surviving items were given to more than 600 students and a second factor analysis performed. A second draft of the *Profile* was then formulated that included 142 items and 27 style factors.

The second version of the instrument was administered to 1,500 students in 15 schools and again subjected to factor analysis. A few items were eliminated to shorten and strengthen the scales. One group of items was replaced by a more reliable set and a consistently unpredictable scale relegated to experimental status. A final draft of 126 items was administered to a national normative sample of 5,000 students in more than 40 schools throughout the nation.

At each stage of development, readability checks were made of the instrument, using the Dale-Chall Readability Formula. The readability of the *Learning Style Profile* was set at grade 5-6 and affirmed by six selected samples. Additional studies examined test-retest reliability and the concurrent validity of the *Profile* against the *Group Embedded Figures Test* (cognitive skill), the *Edmonds Learning Style Identification Exercise* (perceptual responses), and the Dunn, Dunn, and Price *Learning Style Inventory* (affective and environmental elements).

Instrument Validation

Validation and norming of the *Learning Style Profile* (LSP) were undertaken in the winter and spring of 1986. Several separate studies were conducted simultaneously to accomplish this task. In the first study, more than 5,000 students geographically distributed throughout the United States were given the field test version of the *Learning Style Profile*. Normative data were generated from this sample and the reliabilities of subscales determined.

Two studies were conducted to determine the test-retest reliabilities of the *Learning Style Profile* subscales. Additional studies examined the relationship of LSP subscales to "parent" instruments. One study compared the LSP Analytic Skill subscale with the Group Embedded Figures Test.[1] Another examined the relationship of the LSP Visual, Auditory, and Emotive Perceptual Response subscales to the Edmonds Learning Style Identification Exercise[2] subscales. A third study evaluated many of the *Learning Style Profile* preference and orientation subscales in relation to similar scales on the Learning Style Inventory.[3]

Instrument Reliability

The reliability of a test is a measure of its consistency or stability, the extent to which it provides much the same results for the same group on repeated administrations.

Reliability of the *Learning Style Profile* was evaluated in two ways: First, internal consistency coefficients (Cronbach's alpha) were calculated for each subscale, using the data from the entire normative sample. Second, test-retest reliabilities (r_{tt}) were calculated for each subscale from a smaller separate sample for 10-day and 30-day periods of time. An alternate Categorization Skill subscale was adopted as a result of the reliability studies and therefore no test-retest data are available for this subscale at this time.

The subscales generally act as highly independent measures. Because of the independence of the subscales and the variety of scoring techniques used throughout the instrument, it was not appropriate to generate composite correlations for Cronbach's alpha, 10-day, or 30-day test-retest reliabilities.

Results of the reliability studies are presented in Table 1 below. The average internal consistency reliability for subscales is 0.61, with a range from 0.47 to 0.76. These reliabilities are acceptable for short tests specifically intended to collect initial diagnostic information. Since reliability is largely a function of the *length* of a test or subtest, longer subtests with similar items would provide considerably higher reliabilities. If the typical 5-item scale on the *Learning Style Profile* were expanded to 15 similar items, the average reliability would be approximately 0.82.

Further information on the reliability studies may be found in the *Learning Style Profile Technical Manual.*

---

[1] *Group Embedded Figures Test* (GEFT). Herman A. Witkin, Phillip K. Oltman, Evelyn Raskin, and Stephen A. Karp, Palo Alto, Calif.: Consulting Psychologists Press, Inc.

[2] *Edmonds Learning Style Identification Exercise* (ELSIE). Harry Reinert. Lynnwood, Wash.: Edmonds School District No. 15.

[3] *Learning Style Inventory* (LSI). Rita Dunn, Kenneth Dunn, and Gary E. Price. Lawrence, Kans.: Price Systems, Inc.

TABLE 1

LEARNING STYLE PROFILE
Subscale Reliabilities

Subscale	Number of Items	Cronbach's Alpha		10-Day Test-Retest		30-Day Test-Retest	
		n*	Alpha	n*	r_{tt}	n*	r_{tt}
Analytic Skill	5	4,852	.56	219	.54	219	.37
Spatial Skill	5	4,967	.60	227	.77	232	.50
Discrimination Skill	5	5,131	.51	234	.53	234	.48
Categorizing Skill**	8	3,702	.74	na		na	
Sequential Processing Skill	6	4,997	.72	238	.54	230	.42
Memory Skill	12	4,467	.62	175	.58	196	.44
Perceptual Response:							
Visual	20	4,766	.51	218	.74	220	.45
Auditory	20	4,766	.49	218	.66	220	.49
Emotive	20	4,766	.48	218	.70	220	.44
Persistence Orientation	4	4,844	.67	207	.65	215	.59
Verbal Risk Orientation	4	4,745	.55	193	.77	208	.54
Verbal-Spatial Preference	6	4,220	.76	166	.58	170	.43
Manipulative Preference	4	4,766	.69	196	.82	214	.76
Study Time Preference:							
Early Morning	2	4,783	.47	193	.46	213	.33
Late Morning	2	4,873	.67	206	.36	218	.24
Afternoon	3	4,765	.60	194	.47	210	.21
Evening	3	4,903	.58	217	.51	222	.39
Grouping Preference	5	4,760	.64	199	.74	208	.54
Posture Preference	4	4,750	.52	194	.72	212	.56
Mobility Preference	4	4,726	.64	195	.58	209	.56
Sound Preference	4	4,819	.69	194	.78	211	.64
Lighting Preference	5	4,810	.73	202	.63	213	.55
Temperature Preference	4	4,802	.72	201	.59	214	.44

*Total sample for all subscales except the Categorization subscale was 5,154. A separate sample of 3,862 subjects was used for the latter. 10-Day Test-Retest sample was 243. 30-Day Test-Retest sample was 241.

**The categorization subscale was normed on a separate sample. Test-retest data are not available for this subscale.

Instrument Validity

The validity of a test is a measure of its authenticity—whether it measures what it is supposed to measure for its target group. Validity is the most important aspect of a test. Four types of validity will be discussed: face, content, construct, and concurrent.

Face and Content Validity. Face validity means only that a test appears to measure the right things. High face validity is the least important indicator of validity but useful as a means of promoting student motivation and interest. Scales and items on the *Learning Style Profile* have been carefully screened for appropriateness by the Learning Styles Task Force. Scale names have been chosen for their ease of understanding and scale items measure exactly what they appear to measure.

Content validity assesses the match between the content of a test and the knowledge or skills it attempts to measure. The Learning Styles Task Force assisted the National Association of Secondary School Principals in determining which concepts merited inclusion in the *Learning Style Profile.* The Task Force acted as a panel of experts to review the literature of the field, compile an initial developmental list, prepare operational definitions, and approve the final content of each scale.

Construct Validity. Construct validity is concerned with the meaningfulness of a test, whether a test measures the underlying trait or characteristic that gives it meaning. Learning style is such a construct. We cannot directly assess learning style but only its manifestations. Learning style, conceptually, is a *gestalt* of cognitive, affective, and environmental elements that vary from learner to learner. But learning style represents behaviors—skills, responses, and preferences—that can be measured. The construct validity of the *Learning Style Profile* is an indicator of how well it assesses the varying learning styles of different students.

During the development of the *Profile,* a great deal of emphasis was placed on scale and item conceptualization that would support strong construct validity. The Learning Styles Task Force identified and produced position papers on the most defensible elements of learning style. Extensive use was made of exploratory and confirmatory factor analysis in the field testing of the instrument to ensure the inclusion of concepts and items that exhibited

strong factor loading and the exclusion of those that did not. Factor analysis is a computerized statistical technique for identifying the basic interrelationships among sets of test scores. It permits the researcher to evaluate whether the underlying dimensions of a test are those predicted by the theory. Factor analysis of the *Learning Style Profile* identified and helped to purify 23 relatively independent scales that assess elements of learning style. Results from all the factor analyses conducted for instrument development can be found in the *Technical Manual* of the *Profile*.

Concurrent Validity. Concurrent validity is a measure of comparison of student scores on two or more comparable tests. If a test exhibits reasonably high correlations with other measures of the same behaviors, it has good concurrent validity. Several separate studies were undertaken to examine the concurrent validity of the *Learning Style Profile*. Specifically, LSP subscale scores were correlated with similar measures from the Group Embedded Figures Test, the Edmonds Learning Style Identification Exercise, and from the Learning Style Inventory. These three instruments served as models for the development of many of the Learning Style Profile subscales.

1. Correlations with the Group Embedded Figures Test (GEFT)

   It was hypothesized that student scores on the Analytic Skill subscale of the *Learning Style Profile* would correlate significantly with their scores on the Group Embedded Figures Test. This hypothesis was tested with a sample of 78 students, applying a significance criterion of .002 adjusted for multiple correlations. The only subscale on the *Learning Style Profile* that correlated significantly with the Group Embedded Figures Test was the Analytic subscale. The correlation was 0.39.

2. Correlations with the Edmonds Learning Style Identification Exercise (ELSIE)

   The Edmonds Learning Style Identification Exercise is a four scale instrument administered orally to assess student perceptual response. The scales are Picture, Sound, Feeling, and Word. It was hypothesized that the ELSIE Feeling scale would correlate with the Emotive Perceptual Response scale of the *Learning Style Profile*; that the ELSIE Picture scale would correlate with the Visual Perceptual Response subscale of the *Profile*, and that the ELSIE Sound scale would correlate with the Auditory Perceptual Response subscale of the *Profile*. Table 2 presents the findings of a study of 90 students examining these predicted correlations against a .002 level of significance. All correlations achieved significance.

   Further details of this study may be found in the *Technical Manual* of the *Profile*.

3. Correlations with the Learning Style Inventory (LSI)

   A study of 95 students was conducted to examine the correlations of selected *Learning Style Profile* subscales with similar subscales of the Dunn, Dunn, and Price Learning Style Inventory. The subscales in this study all consisted of inventory preference items. The subscales examined are listed in Table 3. This table includes only the principal correlations realized, not all the incidental relationships that exist between the *Learning Style Profile* and the Learning Style Inventory.

   In all but two instances, strong correlations were found between the *Learning Style Profile* subscales and the related Learning Style Inventory subscale. Subsequent examination of the LSI subscales for Noise Level and Persistence showed that these scales contained several items with little or no face or content validity but with incidental correlation. Consequently, these scales are much less focused than those of the *Learning Style Profile*, and the lack of correlation is not unduly disturbing.

   More details of the *Learning Style Profile*-Learning Style Inventory study may be found in the *Technical Manual*.

TABLE 2

CORRELATIONS OF LEARNING STYLE PROFILE (LSP) PERCEPTUAL RESPONSE SUBSCALES WITH EDMONDS LEARNING STYLE IDENTIFICATION EXERCISE (ELSIE) SCALES

ELSIE Scale	Related LSP Perceptual Response Subscales	r	r^2	p
Picture	Visual	.64	.39	.000*
Sound	Auditory	.51	.25	.000*
Feeling	Emotive	.60	.34	.000*

* Significant beyond the p = .002 level

TABLE 3

CORRELATIONS OF LEARNING STYLE PROFILE (LSP) SUBSCALES WITH LEARNING STYLE INVENTORY (LSI) SUBSCALES

LSI Subscale	LSP Subscale Predicted to Correlate With LSI	r	r^2	p
Noise Level	Sound Preference	.15	.02	.143
Light	Lighting Preference	.70	.49	.000*
Temperature	Cool Temperature[1]	.65	.42	.000*
	Warm Temperature	.58	.32	.000*
Design	Informal Posture[2]	.51	.25	.000*
	Formal Posture	.50	.24	.000*
Learning Alone/ Peer Oriented	Grouping Preference	.38	.13	.000*
Persistence	Persistence Orientation	.23	.04	.048
Tactile	Manipulative Preference	.71	.50	.000*
Kinesthetic	Manipulative Preference	.41	.16	.000*
Evening/ Morning	Evening Study Time Preference	.44	.19	.000*
	Early Morning ST Preference	.66	.42	.000*
	Late Morning ST Preference	.40	.15	.000*
Late Morning	Late Morning ST Preference	.49	.23	.000*
Afternoon	Afternoon Study Time Preference	.54	.29	.000*
Needs Mobility	Mobility Preference	.66	.42	.000*

* Significant at the p = .002 level.

[1] The two temperature subscales listed in this analysis combined under subsequent factor analysis into one subscale.

[2] The two posture preference subscales listed in this analysis combined subsequently into one posture preference subscale.

Scale Descriptions

The NASSP *Learning Style Profile* in its published form contains 23 independent scales representing four higher order factors: cognitive skills, perceptual responses, study preferences, and instructional preferences. The scales and their meanings are the following:

1. ANALYTIC SKILL—To identify simple figures hidden in a complex field; to use the critical element of a problem in a different way
2. SPATIAL SKILL—To identify geometric shapes and rotate objects in the imagination; to recognize and construct objects in mental space
3. DISCRIMINATION SKILL—To visualize the important elements of a task; to focus attention on required detail and avoid distractions
4. CATEGORIZING SKILL—To use reasonable vs. vague criteria for classifying information; to form accurate, complete, and organized categories of information
5. SEQUENTIAL PROCESSING SKILL—To process information sequentially and verbally; to readily derive meaning from information presented sequentially or verbally
6. MEMORY SKILL—To retain distinct vs. vague images in repeated tasks; to detect and remember subtle changes in information
7. PERCEPTUAL RESPONSE: VISUAL—Initial reaction to information as visual response
8. PERCEPTUAL RESPONSE: AUDITORY—Initial reaction to information as auditory response
9. PERCEPTUAL RESPONSE: EMOTIVE—Initial reaction to information as emotional and/or physiological response
10. PERSISTENCE ORIENTATION—Willingness to work at a task until completion
11. VERBAL RISK ORIENTATION—Willingness to express opinions, speak out, etc.
12. VERBAL-SPATIAL PREFERENCE—For verbal vs. nonverbal activities
13. MANIPULATIVE PREFERENCE—For "hands-on" activities
14. STUDY TIME PREFERENCE: EARLY MORNING—For studying in the early morning
15. STUDY TIME PREFERENCE: LATE MORNING—For studying in the late morning
16. STUDY TIME PREFERENCE: AFTERNOON—For studying in the afternoon
17. STUDY TIME PREFERENCE: EVENING—For studying in the evening
18. GROUPING PREFERENCE—For whole class vs. small group vs. dyadic grouping
19. POSTURE PREFERENCE—For formal vs. informal study arrangements
20. MOBILITY PREFERENCE—For moving about and taking breaks vs. working until finished
21. SOUND PREFERENCE—For quiet study areas vs. background sound (radio, TV)
22. LIGHTING PREFERENCE—For bright vs. lower lighted study areas
23. TEMPERATURE PREFERENCE—For studying in a cool vs. a warm environment

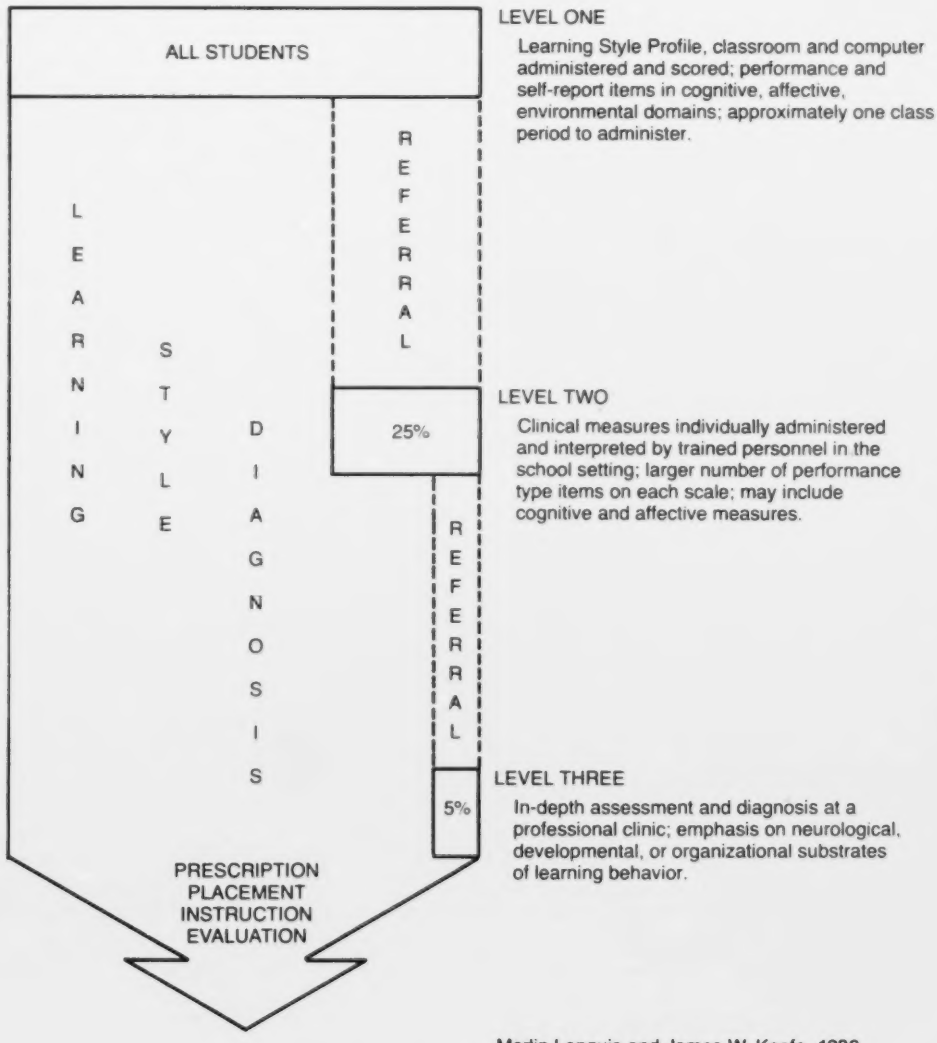
A Simultaneous Processing scale that assesses skill in processing information visually and pictorially has been retained experimentally for additional data collection, but student scores are not reported on the *Profile* because of the scale's poor reliability. An Intake or Eating scale was discarded from consideration at an early stage for purely administrative reasons, although the scale itself loaded strongly in factor analysis. The Task Force judged that most middle level and senior high schools would not permit any eating during instructional time even if the *Learning Style Profile* indicated a strong student preference.

Use of the Instrument

The extensive readability checks, concurrent validity studies, and factor analyses of the instrument, combined with the supervisory efforts of the Learning Styles Task Force, assure valid results for the use of the *Learning Style Profile* with students in the sixth tostwelfth grades. Evidence from the reliability studies does indicate, however, that several of the scales may be somewhat contextually sensitive. These subscales may provide differing results depending upon student attitudes and the setting of administration. This possibility exists particularly with the preference subscales that showed marked drops in test-retest reliabilities. Students with extremely strong styles, those for whom a particular style is very significant in their learning, should be less subject to this variation.

The *Learning Style Profile* is a first-level diagnostic tool. Persons using this instrument should be aware that many of the subscale scores are based on five or fewer items. Questionable results on any subscale for individual students should be resolved by additional in-depth testing (level 2 assessment). The Learning Style Assessment Model below illustrates these relationships.

FIGURE 1
LEARNING STYLE ASSESSMENT MODEL


ALL STUDENTS
LEVEL ONE
Learning Style Profile, classroom and computer administered and scored; performance and self-report items in cognitive, affective, environmental domains; approximately one class period to administer.
REFERRAL
LEARNING STYLE DIAGNOSIS
25%
LEVEL TWO
Clinical measures individually administered and interpreted by trained personnel in the school setting; larger number of performance type items on each scale; may include cognitive and affective measures.
REFERRAL
5%
LEVEL THREE
In-depth assessment and diagnosis at a professional clinic; emphasis on neurological, developmental, or organizational substrates of learning behavior.
PRESCRIPTION
PLACEMENT
INSTRUCTION
EVALUATION

Marlin Languis and James W. Keefe, 1986

Section 2: Directions for Administering the Learning Style Profile

Before the Administration

Plan the administration of the *Learning Style Profile* in a way that will encourage students to view it seriously and to do their best.

1. Avoid Monday and Friday administrations; schedule Tuesday, Wednesday, or Thursday, whenever possible;
2. Avoid days immediately before or after vacations or major school events;
3. Avoid class periods that follow physical education or athletic competitions;
4. Avoid interruptions by notifying the office and posting "Do Not Disturb" signs;
5. Look over the *Profile* and the *Examiner's Manual* before the administration and be clear about the directions for completing the background information sections of the answer sheet; know your school and class codes;
6. Observe the *Examiner's Manual* instructions for administering the *Profile* and read verbatim those paragraphs preceded by the word "Say";
7. Allow enough time for the administration; younger students sometimes require more than a typical 50-minute class period;
8. Be prepared to note any major irregularities for individuals or the group on the Examiner's Comment Sheet, including student language difficulty or restrictive physical handicaps, and severe interruptions or distractions. (See Appendix for this sheet; please photocopy.) For invalid tests, draw a large "X" across side 1 and side 2 of the answer sheet to prevent the scoring of the *Profile*.

Materials Needed

Before the meeting the test group, be sure to have the following:

- *Learning Style Profile* booklets—one for each student and one extra
- NCS Answer Sheets—one for each student and one extra
- A supply of No. 2 pencils
- *Examiner's Manual* with Comment Sheet
- Student Identification Numbers
- School Number
- Class Number

Directions

Distribute Answer Sheets and No. 2 pencils. Tell students not to mark on the answer sheet until told to do so. Use only No. 2 pencils. No other writing implement can be read by the optical scanning device. Mechanical pencils generally have hard lead and should not be used. Markers and ballpoint pens will not work. Make sure the circles under the various codes are filled in so that the data can be properly processed. Be aware that no scanning device can read copied answer sheets; use only originals.

Distribute copies of the *Learning Style Profile*. Assist the students in completing the background information sections of the answer sheet. Instructions for this process are printed on pages one and two of the *Profile* under the title, FILLING IN THE ANSWER SHEET. These instructions are repeated here for your convenience.

When all students have received answer sheets, No. 2 pencils, and copies of the *Profile*, proceed with the following directions:

Name

Say: THE FIRST PART OF THE ANSWER SHEET ASKS FOR YOUR NAME
PRINT YOUR FULL LAST NAME
LEAVE A SPACE
PRINT YOUR FULL FIRST NAME
LEAVE A SPACE
PRINT YOUR MIDDLE INITIAL

BENEATH EACH LETTER OF YOUR NAME, DARKEN THE CIRCLE FOR THAT LETTER. BE SURE TO DARKEN A CIRCLE WHERE YOU LEAVE SPACES IN YOUR NAME.

Sex

Say: FIND THE BOX MARKED SEX NEXT TO YOUR NAME. DARKEN THE CIRCLE FOR YOUR SEX (M FOR MALE, F FOR FEMALE).

Grade

Say: THE BOX MARKED GRADE IS BELOW THE BOX MARKED SEX. DARKEN THE CIRCLE FOR YOUR GRADE.

Race

Say: THE BOX MARKED RACE (BELOW YOUR GRADE) IS FOR YOUR RACIAL/ETHNIC BACKGROUND. CHOOSE THE PROPER CODE NUMBER FROM THE LIST IN YOUR BOOKLET AND DARKEN THE CIRCLE FOR YOUR NUMBER ON THE ANSWER SHEET.

1. ASIAN
2. BLACK
3. HISPANIC
4. NATIVE AMERICAN (INDIAN OR ALASKAN)
5. WHITE
6. OTHER

Birth Date

Say: THE SECTION FOR YOUR BIRTHDATE IS AT THE BOTTOM LEFT CORNER OF THE ANSWER SHEET. DARKEN THE CIRCLE FOR THE MONTH YOU WERE BORN. WRITE IN AND DARKEN THE CIRCLES FOR THE DAY AND YEAR YOU WERE BORN.

Make sure each student knows his or her personal ID number as issued by the school. While students are entering their personal ID numbers, write the SCHOOL and CLASS numbers on the chalk board. Carefully identify each number.

Identification Number

Say: THE SECTION MARKED IDENTIFICATION NO. IS FOR YOUR PERSONAL ID NUMBER. START WITH BOX A AND WRITE THE NUMBER THE SCHOOL HAS ASSIGNED YOU IN BOXES A TO H. THEN DARKEN THE CIRCLE FOR EACH OF THE NUMBERS.

School

Say: BOXES I TO M ARE FOR OUR SCHOOL CODE. THE SCHOOL NUMBER IS WRITTEN ON THE CHALK BOARD. COPY THIS NUMBER IN BOXES I TO M AND DARKEN THE CIRCLES FOR EACH NUMBER.

Class

Say: BOXES N TO P ARE FOR OUR CLASS CODE. THE CLASS NUMBER IS ALSO WRITTEN ON THE CHALK BOARD. COPY THIS NUMBER IN BOXES N TO P AND DARKEN THE CIRCLES FOR EACH NUMBER.

When all the students have completed the background information sections of the answer sheet, the examiner should read the front page of the booklet aloud—reproduced here for your convenience.

Say: NOW READ THE GENERAL INFORMATION ON THE FRONT PAGE OF THE *PROFILE* WITH ME.

Say: EVERY STUDENT HAS A PERSONAL LEARNING STYLE.

THE QUESTIONS IN THIS BOOKLET WILL SHOW YOU *YOUR* LEARNING STYLE—HOW YOU LEARN AND HOW YOU LIKE TO LEARN. THEY WILL HELP YOU KNOW YOURSELF BETTER AND AID YOUR TEACHERS IN THEIR TEACHING.

READ EACH QUESTION CAREFULLY. WHEN YOU DECIDE ON THE ANSWER YOU LIKE BEST, MARK THE LETTER FOR THAT ANSWER ON YOUR ANSWER SHEET. BE SURE THAT THE ANSWER NUMBER IS THE SAME AS THE QUESTION IN THE BOOKLET.

USE ONLY A #2 PENCIL TO MARK THE ANSWER SHEET. PLEASE DO NOT MARK IN THE BOOKLET. MARK ONLY ONE ANSWER FOR EACH QUESTION. ANSWERS SHOULD BE CLEAN AND CLEAR. IF YOU MAKE A MISTAKE OR WANT TO CHANGE AN ANSWER, ERASE YOUR FIRST ANSWER NEATLY.

THIS *PROFILE* IS NOT TIMED. YOU SHOULD BE ABLE TO FINISH IT IN ONE CLASS PERIOD. YOU NEED NOT HURRY BUT DO NOT WASTE TIME.

YOU WILL NOTICE THAT SOME QUESTIONS ARE PRINTED UPSIDE DOWN ON THE BACKS ON THE PAGES. DO ALL THE ITEMS ON THE FRONTS OF THE PAGES FIRST. WHEN YOU REACH THE BACK OF THE BOOKLET, TURN IT AROUND AND BEGIN THE ITEMS ON THE BACKS OF THE PAGES.

Caution students to mark their answer sheets carefully.

Say: MARK ALL YOUR ANSWERS ON YOUR ANSWER SHEET, NOT IN THE BOOKLET. MARK ONLY *ONE* CIRCLE FOR EACH ITEM AND DARKEN EACH CIRCLE COMPLETELY. IF YOU MAKE A MISTAKE OR WANT TO CHANGE AN ANSWER, ERASE YOUR ORIGINAL ANSWER CAREFULLY.

Urge students to note how the answer sheet is organized.

Say: NOTICE HOW THE NUMBERS ARE LISTED IN COLUMNS ON THE ANSWER SHEET AND THAT EACH SIDE HAS AN UPPER AND LOWER SECTION. CHECK FROM TIME TO TIME THAT YOU ARE USING THE RIGHT NUMBER ON THE ANSWER SHEET.

IF YOU HAVE ANY QUESTIONS DURING THE ADMINISTRATION, ASK ME *PRIVATELY* FOR HELP.

REMEMBER NOT TO MARK IN THE BOOKLET.

NOW TURN TO PAGE 3 AND BEGIN WITH QUESTION NUMBER 1.

When all students have completed the *Profile*,

Say: PLEASE CLOSE YOUR *PROFILE* BOOKLETS AND REMAIN SEATED WHILE THE MATERIALS ARE BEING COLLECTED.

During the Administration

1. Answer any procedural concerns the students raise, but DO NOT explain the questions. Simply advise students to do the best they can.
2. Check, by moving about the room, that each student has properly filled in NAME, SEX, GRADE, and all code numbers.
3. Record on the EXAMINER'S COMMENT SHEET any problems of administration.

After the Administration

1. Collect the No. 2 pencils.
2. Collect the *Learning Style Profile* Booklets.
3. Collect the Answer Sheets.
4. Deliver the PROFILES and ANSWER SHEETS, and your EXAMINER'S COMMENT SHEET to the counselor's or principal's office.

Section 3: Scoring and Interpreting the Learning Style Profile

Machine Scoring

The *Learning Style Profile* may be machine-scored by a qualified service agency or locally using a computer and mark-sense scanning equipment. Several computer programs are available from the National Association of Secondary School Principals for use with mainframe, mid-size, or microcomputers. If the profile is machine scored, the computer will generate, at minimum, individual profiles for each student. This STUDENT PROFILE lists standard scores for each subscale based on national or local norms adjusted for grade, race, and sex. Other reports that can be produced include class roster printouts, class profiles, and school profiles. An example of a student profile is reproduced later in this chapter. While this form may vary slightly depending upon the source of the printout, it will always include the following information:

Student Identification:	Name, Birthdate, Race, Sex, Grade
Group Identification:	School, Class, Date
Subscale Scores:	Standardized scores for each subscale
Profile Bars:	Graphics indicating the placement of each subscale score
Consistency Score:	A number representing the consistency with which the student responded to the preference items of the instrument
Normative Sample:	Indication of the normative group used to generate the profile (LOCAL or NATIONAL)

Brief notes on interpretation are included later in this chapter. Detailed descriptions of the subscales may be found in the *Learning Style Profile Technical Manual.*

Hand Scoring

The LSP is designed to be machine scored, but it is possible to hand score the instrument. Hand scoring is a three stage process: 1) scoring individual items; 2) generating subscale raw scores; and 3) determining subscale standardized scores. Each of these steps is outlined below.

Scoring Individual Items. The scoring of individual items is outlined in Table 4. When directed to score items as "correct" or "incorrect," assign a value of 1 to the correct response and 0 to the incorrect response. In all other instances, assign the value specified.

Generating Subscale Raw Scores. Subscale raw scores are generated by adding together the score for individual items on each subscale. Items on each subscale may be found in Table 5.

Determining Subscale Standardized Scores. LSP subscale scores are standardized as T-scores, a linear standard score with a mean of 50 and a standard deviation of 10. (Preliminary Scholastic Aptitude Test scores were standardized in this way for many years). Table 8 in Section 4 of this manual contains general normative data for the *Profile.* This norms table is provided specifically for the convenience of those who wish to hand score the *Profile.* Locate student raw scores for each subscale in the left column of Table 8 and find the equivalent standard score for the subscale under the appropriate heading. Please note that these standard scores will vary somewhat from those generated by computer since the latter simultaneously adjusts for sex, grade, and race.

Calculating a Consistency Score. The Consistency Score is an estimate of the uniformity and/or responsibility a student exhibits in answering the preferential items of the *Profile.* To generate a consistency score for each student, perform the following simple steps.

Step 1. Subtract the student's computed *raw scores* for each of the following pairs of similar items to obtain five values representing the difference scores for each pair.

Item 62 – Item 77 =
Item 63 – Item 96 =
Item 69 – Item 98 =
Item 78 – Item 101 =
Item 84 – Item 91 =

Step 2. Make all five values positive (eliminate the negative signs).

Step 3. Add the five values in Step 2. This total is the student's consistency score. It may range from 0 to 20.

TABLE 4

LEARNING STYLE PROFILE ITEM SCORING KEY

Items 1-16: Score as correct or incorrect. Assign 1 to the correct responses, 0 to the incorrect responses. The correct responses for these items are:

1. C	5. C	9. B	13. C
2. E	6. E	10. A	14. A
3. B	7. A	11. A	15. B
4. E	8. B	12. A	16. A

Items 17-24: Score using the following key:

17.	A=2	B=3	C=1	D=0	21.	A=1	B=0	C=3	D=2
18.	A=3	B=1	C=0	D=2	22.	A=3	B=0	C=2	D=1
19.	A=0	B=1	C=3	D=2	23.	A=2	B=0	C=1	D=3
20.	A=2	B=1	C=3	D=0	24.	A=0	B=1	C=3	D=2

Items 25-40: Score as correct or incorrect. The correct responses for these items are:

25. D	29. C	33. A	37. A
26. C	30. A	34. A	38. E
27. B	31. A	35. A	39. C
28. A	32. A	36. E	40. E

Items 41-60: Assign 1 point to each A response selected, 1 point to each B response selected, and 1 point to each C response selected. The Visual Response score is the total of A responses. The Auditory Response score is the total of B responses. The Emotive Response score is the total of C responses.

Items 60-108: Twenty of these items are scored using A=1, B=2, C=3, D=4, or E=5. Twenty-eight items call for reversed scoring: A=5, B=4, C=3, D=2, E=1. The reversed items in this section are:

62	64	65	66	72	73	74	75	77	78
80	82	84	85	86	87	88	89	92	93
95	97	99	101	102	106	107	108		

After scoring the reversed items, score all the remaining items using regular values.

Items 109-126: These items are scored as correct or incorrect. The correct response for each of these items is:

109. B	113. A	117. A	121. B	125. A
110. B	114. B	118. B	122. A	126. B
111. A	115. A	119. B	123. B	
112. B	116. B	120. B	124. B	

Count *only* these items for the subscale score: 109, 110, 111, 112, 114, 116, 118, 119, 120, 121, 123, 124, 126.

Completing a Student Profile

After standard scores have been determined from Table 8 for each of the subscales, a student Profile can be generated on the blank Profile form found in the Appendix. (Photocopy the form.) To complete the Profile, perform the following steps.

Step 1. Fill in the top of the form with the appropriate student identification information.

Step 2. For each subscale, record the student's standard scores previously determined.

Step 3. Fill in the Profile boxes using the scheme in Table 6.

A sample of a completed profile may be found in Figure 2.

Interpreting the Profile

The SCORE on a given subscale is the standard score for that subscale. The process of standardization may be based on national or local data. Because scores are derived in some cases from as few as five values, no real continuum of scores exists. Only general significance should be attached to any single score on the *Profile*.

The score ranges on the profile provide the most useful basis for discussion of student or class results. These range placements are made on the basis of deviation from the norm. A mark falling in the first of the four boxes, the far left box, places the individual in a group containing only 16 percent of the population. If the mark is to the far left of that box, the reference group is closer in size to 2.5 percent of the population. The two middle boxes on the chart represent a group within one standard deviation of the mean. Approximately 68 percent of all students will fall within this area for each subscale. A

TABLE 5

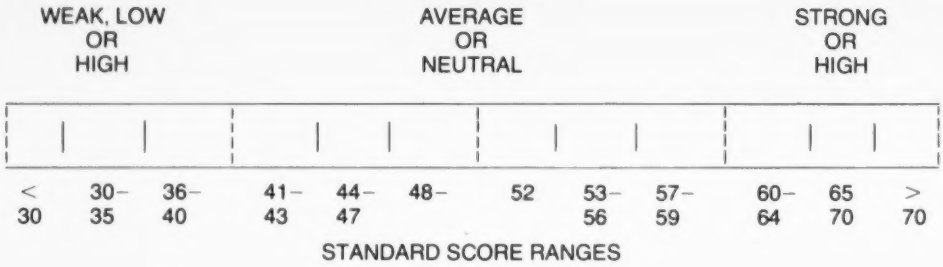
LSP SUBSCALE GENERAL DATA

Subscale	Item Numbers	Mean	Standard Deviation
Analytic Skill	25-29	2.50	1.46
Spatial Skill	36-40	2.45	1.51
Discrimination Skill	7-11	3.20	1.35
Categorization Skill	17-24	10.31	5.00
Sequential Processing Skill	1-6	4.89	1.50
Memory Skill	109, 110, 112, 114, 116, 118, 119 120, 121, 123, 124, 126	5.91	2.53
Perceptual Response:			
Visual	All A responses to items 41-60	8.72	2.89
Auditory	All B responses to items 41-60	4.61	2.42
Emotive	All C responses to items 41-60	6.67	2.54
Persistence Orientation	68, 74, 84, 91	13.67	2.87
Verbal Risk Orientation	75, 92, 95, 107	12.35	2.90
Manipulative Preference	64, 73, 82, 102	12.88	3.21
Study Time Preference:			
Early Morning	72, 106	5.77	1.76
Late Morning	89, 93	5.87	1.89
Afternoon	94, 100, 104	9.97	2.21
Evening	62, 66, 77	9.14	2.64
Verbal-Spatial Preference	30, 31, 32, 33, 34, 35	3.74	1.92
Grouping Preference	65, 70, 83, 90, 99	17.83	3.42
Posture Preference	79, 87, 97, 105	11.91	2.97
Mobility Preference	76, 86, 103, 108	13.47	3.18
Sound Preference	71, 78, 81, 101	11.89	3.61
Lighting Preference	61, 67, 69, 80, 98	14.85	4.09
Temperature Preference	83, 85, 88, 96	11.73	3.37

TABLE 6

COMPLETING THE STUDENT PROFILE

SCALE INDICATORS



PROFILING THE SCORES

If a student's standard score is:	Place an X for that subscale on:
Less than 30	Left side of first box
30-35	Middle of first box
36-40	Right side of first box
41-43	Left side of second box
44-47	Middle of second box
48-52	Line between second and third box
53-56	Middle of third box
57-59	Right side of third box
60-64	Left side of fourth box
65-70	Middle of fourth box
Greater than 70	Right side of fourth box

Examples:

	SCORE	WEAK	AVERAGE		STRONG
ANALYTIC	47		X		
SPATIAL	54			X	
DISCRIMINATION	56			X	

mark in the far right box, the fourth box, places the student in a group containing approximately 16 percent of the normative population. A mark in the far right of that box places the student in a group containing only about 2.5 percent of the population. Students with sub-scale scores in the far right or far left boxes generally are more likely to be governed by that element of style. If the style is a perceptual response, orientation, or preference, the student will tend to be less flexible when adaptation is required.

FIGURE 2

LEARNING STYLE PROFILE

THIS PROFILE IS FOR: JAMES ANDERSON DOE

BIRTHDATE: 10/25/68 SEX: M GRADE: 12 RACE: B
DATE: 8/21/86 SCHOOL: 00123 CLASS: 071

SKILLS—GENERAL APPROACH TO PROCESSING INFORMATION

	SCORE	WEAK	AVERAGE		STRONG
ANALYTIC	47		XX		
SPATIAL	54			XX	
DISCRIMINATION	56			XX	
CATEGORIZATION	51		XXX		
SEQUENTIAL			MISSING		
MEMORY	66				XX

PERCEPTUAL RESPONSES—INITIAL RESPONSE TO VERBAL INFORMATION

	SCORE	WEAK	AVERAGE		STRONG
VISUAL	44		XX		
AUDITORY	56			XX	
EMOTIVE	47		XX		

ORIENTATIONS AND PREFERENCES—PREFERRED RESPONSE TO STUDY OR INSTRUCTIONAL ENVIRONMENT

	SCORE	LOW	AVERAGE		HIGH
PERSISTENCE	65				XX
VERBAL RISK	28	XX			
MANIPULATIVE	35	XX			
STUDY TIME:					
EARLY MORNING	57			XX	
LATE MORNING	56			XX	
AFTERNOON	46		XX		
EVENING	31	XX			

	SCORE	HIGH	NEUTRAL		HIGH	
VERBAL-SPATIAL	31	SPATIAL XX				VERBAL
GROUPING	71	SMALL			XX	LARGE
POSTURE	67	INFORMAL			XX	FORMAL
MOBILITY	67	STILLNESS			XX	MOVEMENT
SOUND	70	QUIET			XX	SOUND
LIGHTING		DIM	MISSING			BRIGHT
TEMPERATURE	48	COOL	XXX			WARM

CONSISTENCY SCORE: 4 NORMATIVE SAMPLE: NATIONAL

The consistency score on the bottom of the profile is an estimate of how consistently the student answered the preferential questions of the Profile. It may also indicate what level of attention or responsibility the student brought to the task. A consistency score of 1 to 7 may be considered good. A consistency score of 8 to 14 is more questionable but acceptable. A consistency score of more than 14 suggests that the results of the testing should be examined carefully. The student may have randomly marked the instrument, or have a reading problem. It is also useful to examine answer sheets with consistency scores of 0 to determine whether students "straight lined" the answer sheet; i.e., marked all answers the same.

The word MISSING will appear in place of an XXX marking on the Profile when insufficient data are available to generate a subscale standard score.

Instructional Implications

The *Learning Style Profile* is intended to help teachers identify student learning style strengths and weaknesses and thereby organize instruction more efficiently and effectively. The LSP is a diagnostic tool that can support greater personalization of instruction and learning. But the *Profile* is a first level diagnostic instrument. Many of the subscales have five or fewer items, inherently limiting the meanings of a given score and the instructional assumptions that can be made.

Existing research suggests that students with very strong or very weak skills, responses, or preferences are likely to benefit from skills training that augments those strengths or weaknesses, and instructional arrangements that optimize those responses or preferences. Students with strong cognitive skills are more ready for challenging instruction and more capable of working at or beyond grade level. Students with strong visual response are likely to learn less effectively if instruction is strictly verbal (auditory). Those with strong emotional response or a high need for manipulative activities may be indifferent to typical auditory or visual instruction. Those with strong study time or instructional preferences will learn best under matched (personalized) learning conditions.

Teachers will find CLASS PROFILES helpful in organizing instruction for students with similar cognitive strengths or weaknesses, with similar perceptual response tendencies, or with similar instructional preferences. Students with Analytic Skill and Categorizing Skill deficiencies, for example, will benefit from focused problem-solving activities. Those with afternoon or evening Study Time preferences will function more successfully in early morning learning activities if their other instructional and study preferences are matched. Those with low Verbal Risk orientation will fare better in smaller groups where the possibility of embarrassment is lessened and useful interaction can be optimized.

The Learning Style Task Force is currently engaged in the development and field testing of a computerized instructional management system that will enable teachers to more effectively relate teaching style and methodology to student learning style (available in 1987).

Section 4: Normative Sample and Data

The Sample

Twenty-two of the 23 *Learning Style Profile* subscales were normed on a national random sample of 5,154 students representing all grades from 6 through 12. The sample was drawn from the NASSP data bank of American schools and stratified by public schools (90 percent) and private schools (10 percent), senior high schools (60 percent), and middle level schools (40 percent). The sample was drawn by ZIP code to ensure adequate representation for each region of the country, by state, and greater representation from populous areas. Schools in the sample ranged in size from fewer than 250 students to more than 2,000. The average senior high school in the sample enrolled 780 students. The average middle level school enrolled 566 students. Eighteen percent of the sample represented urban areas, with the remainder from suburban, small town, and rural communities.

Sampling was conducted with a concern for adequate representation by race, sex, and socioeconomic background but no deliberate stratification was attempted for these variables. The total number of students that all sample schools were asked to test was 10,800. The actual number of usable answer sheets processed was 5,154, a 48 percent rate of return. The size of the final sample reflects natural respondent variation from region to region and grade to grade. Two formal follow-ups were conducted to increase the range and rate of response.

Problems encountered in the reliability of the original Categorization Skill subscale led to its replacement after the national normative study was underway. The replacement set of items was normed using a purposive sample of 3,862 subjects drawn from a total requested number of 4,900, for a 79 percent rate of return. Schools in this sample represented all regions of the country and senior high and middle school levels.

Table 7 contains a breakdown of the normative sample by sex, race, grade, and region.

More detailed information on the normative study, including a statistical examination of the sample, can be found in the *Learning Style Profile Technical Manual.*

Normative Table

Complete normative data may be found in the *Technical Manual.* General norms are provided in Table 8 below. Standard scores from this table will vary slightly from those generated by computer scoring, since the latter also controls for sex, grade, and racial variations. Differences in interpretation, however, are not generally notable.

TABLE 7

CHARACTERISTICS OF THE NORMATIVE POPULATION

Characteristic	22 Subscales	Categorization Subscale
Total Sample	5,154	3,862
Sex		
Male	2,495	1,894
Female	2,556	1,852
Unknown	103	116
Race		
Asian	78	74
Black	421	154
Hispanic	83	67
Native American	93	69
White	3,923	2,927
Other	58	58
Unknown	498	513
Grade		
Sixth	435	349
Seventh	777	576
Eighth	960	338
Ninth	835	641
Tenth	889	721
Eleventh	457	647
Twelfth	664	393
Unknown	137	197
Region		
East	1,007	994
Midwest	2,476	765
South	644	453
West	818	1,438
Unknown	209	212

TABLE 8

General Norms Table
LEARNING STYLE PROFILE
RAW SCORE TO STANDARD SCORE CONVERSIONS

RAW SCORE	SKILLS							PERCEPTUAL RESPONSE			
	ANALYTIC	SPATIAL	DISCRIMINATION	CATEGORIZATION	SEQUENTIAL	MEMORY		VISUAL	AUDITORY	EMOTIVE	
0	**33**	**34**	**26**	**77**	**17**	**27**		**20**	**31**	**24**	
1	**40**	**40**	**34**	**75**	**24**	**31**		**23**	**35**	**28**	
2	**47**	**47**	**41**	**73**	**31**	**35**		**27**	**39**	**32**	
3	53	54	49	71	37	38		30	43	36	
4	60	60	56	69	44	42		34	47	39	
5	67	67	63	67	51	46		37	52	43	
6				**65**	**57**	**50**		**41**	**56**	**47**	
7				**63**		**54**		**44**	**60**	**51**	
8				**61**		**58**		**48**	**64**	**55**	
9				59		62		51	68	59	
10				57		66		54	72	63	
11				55		70		58	76	67	
12				**53**		**74**		**61**	**81**	**71**	
13				**51**				**65**	**85**	**75**	
14				**49**				**68**	**89**	**79**	
15				47				72	93	83	
16				45				75	97	87	
17				43				79	101	91	
18				**41**				**82**	**105**	**95**	
19				**39**				**86**	**109**	**99**	
20				**37**				**89**	**114**	**102**	
21				35							
22				33							
23				31							
24				**29**							
25											

TABLE 8 (cont.)

General Norms Table
LEARNING STYLE PROFILE
RAW SCORE TO STANDARD SCORE CONVERSIONS

RAW SCORE	PREFERENCES AND ORIENTATIONS													
				STUDY TIME										
	PERSISTENCE	VERBAL RISK	MANIPULATIVE	EARLY MORNING	LATE MORNING	AFTERNOON	EVENING	VERBAL SPATIAL	GROUPING	POSTURE	MOBILITY	SOUND	LIGHT	TEMPERATURE
0								**31**						
1								**36**						
2				**29**	**30**			**41**						
3				34	35	18	27	46						
4	16	21	22	40	40	23	31	51		23	20	28		27
5	20	25	25	46	45	28	34	57	12	27	23	31	26	30
6	**23**	**28**	**29**	**51**	**51**	**32**	**38**	**62**	**15**	**30**	**27**	**34**	**28**	**33**
7	**27**	**32**	**32**	**57**	**56**	**37**	**42**		**18**	**33**	**30**	**36**	**31**	**36**
8	**30**	**35**	**35**	**63**	**61**	**41**	**46**		**21**	**37**	**33**	**39**	**33**	**39**
9	34	38	38	68	67	46	49		24	40	36	42	36	42
10	37	42	41	74	72	50	53		27	44	39	45	38	45
11	41	45	44			55	57		30	47	42	48	41	48
12	**44**	**49**	**47**			**59**	**61**		**33**	**50**	**45**	**50**	**43**	**51**
13	**48**	**52**	**50**			**64**	**65**		**36**	**54**	**49**	**53**	**45**	**54**
14	**51**	**56**	**53**			**68**	**68**		**39**	**57**	**52**	**56**	**48**	**57**
15	55	59	57			73	72		42	60	55	59	50	60
16	58	63	60						45	64	58	61	53	63
17	62	66	63						48	67	61	64	55	66
18	**65**	**69**	**66**						**50**	**71**	**64**	**67**	**58**	**69**
19	**69**	**73**	**69**						**53**	**74**	**67**	**70**	**60**	**72**
20	**72**	**76**	**72**						**56**	**77**	**71**	**72**	**63**	**75**
21									59				65	
22									62				67	
23									65				70	
24									**68**				**72**	
25									71				75	

Section 5. Terms of Use

Copyright

The *Learning Style Profile* and answer sheets are copyrighted. They are not to be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopy, recording, or any information storage and retrieval system without permission in writing from the NASSP. The reproduction in any way of any part of the *Learning Style Profile* is a violation of the copyright law. No adaptations, modifications, or special versions may be made without permission in writing from the NASSP. Users should realize that any adaptation, modification, or special version may affect the validity of the *Profile*.

Permissions

The NASSP will consider requests for permission to reproduce or translate part or all of the *Learning Style Profile*. Requests to reproduce or translate should be addressed to:

NASSP Director of Publications and
Editorial Services
1904 Association Drive
Reston, Va. 22091.

Permission is granted hereby, without formal request, for reproduction in a textbook, thesis, scholarly report, or article in a professional journal of material as follows:

1. Excerpts from the *Examiner's Manual* of not more than the equivalent of one page of the original text, unless such excerpts are forbidden by item 2 below.
2. Tables and charts in original form, abridged, or rearranged, but not norms or tables of norms, answer sheets, answer keys, nor any test content whatsoever.
3. Profile forms and similar reporting forms when used as illustrations and to permit presentation of material in graphic form.

An appropriate acknowledgment of the source—test, authors, publisher, and copyright notice—must be included.

Copying of test norms without authorization is a violation of copyright. Copying includes, but is not limited to, entry of test norms into a computer memory for purposes of test processing, scoring, or reporting.

Any person or organization wishing to copy the *Learning Style Profile's* test norms will be required to obtain written permission and will be required to pay a fee. Permission from NASSP for use of test norms does not imply responsibility for the accuracy of such copying or its application.

Qualifications for Purchase

The *Learning Style Profile* will be made available for purchase and use in accord with the principles and practices of testing and counseling commonly accepted by professional educators and psychologists. The *Learning Style Profile* will not be sold to any organization or individual engaged in testing or counseling by mail. Users must agree to guard against improper use and to make test instruments and scoring information accessible only to authorized examiners and users.

1. Accredited or approved schools, colleges, and governmental agencies may order materials on official purchase orders, or official letterhead with purchase order number, signed by an appropriate administrator.
2. Teachers and counselors may order by official purchase order with signed authorization, on official letterhead, from the superintendent, principal, or guidance director.
3. Graduate students may order for research or training purposes with signed authorization, on academic letterhead, from the supervising professor.
4. Private consultants and all other individuals may order only upon establishing evidence of appropriate qualifications for test use and interpretation. (Please write NASSP for a Qualification Form.)
5. Libraries may order reference copies only upon the assurance that the *Learning Style Profile* will be made available solely to educators, psychologists, and authorized graduate students.
6. College bookstores may order materials for resale only to qualified faculty members or authorized graduate students. Bulk orders must be accompanied by the name, title, department, and course of the supervising professor. Materials must be kept in reserve and sold only to properly identified enrollees in the appropriate course(s).

Appendix

- Examiner's Comment Sheet
- Student/Class Profile Form
- LSP Order Form

Examiner's Comment Sheet

Please record on this sheet and additional pages, if necessary, any comments or concerns that may arise during the administration of the PROFILE.

School ID Number _____ Class ID Number _____

Comments:

LEARNING STYLE PROFILE

THIS PROFILE IS FOR:

BIRTHDATE: SEX: GRADE: RACE:
DATE: SCHOOL: CLASS:

SKILLS—GENERAL APPROACH TO PROCESSING INFORMATION

	SCORE	WEAK	AVERAGE		STRONG
ANALYTIC					
SPATIAL					
DISCRIMINATION					
CATEGORIZATION					
SEQUENTIAL					
MEMORY					

PERCEPTUAL RESPONSES—INITIAL RESPONSE TO VERBAL INFORMATION

	SCORE	WEAK	AVERAGE		STRONG
VISUAL					
AUDITORY					
EMOTIVE					

ORIENTATIONS AND PREFERENCES—PREFERRED RESPONSE TO STUDY OR INSTRUCTIONAL ENVIRONMENT

	SCORE	LOW	AVERAGE		HIGH
PERSISTENCE					
VERBAL RISK					
MANIPULATIVE					
STUDY TIME:					
EARLY MORNING					
LATE MORNING					
AFTERNOON					
EVENING					

	SCORE	HIGH	NEUTRAL		HIGH	
VERBAL-SPATIAL		SPATIAL				VERBAL
GROUPING		SMALL				LARGE
POSTURE		INFORMAL				FORMAL
MOBILITY		STILLNESS				MOVEMENT
SOUND		QUIET				SOUND
LIGHTING		DIM				BRIGHT
TEMPERATURE		COOL				WARM

CONSISTENCY SCORE: NORMATIVE SAMPLE:

LSP ORDER FORM

Quantity	Item	Unit Price	Total
	LEARNING STYLE PROFILE (Packages of 35)*	$ 25.00	
	NCS ANSWER SHEETS (Packages of 35)	3.50	
	EXAMINER'S MANUAL (Additional Copies)	3.00	
	TECHNICAL MANUAL (Available Fall, 1986)	TBA	
	FORTRAN SCORING PACKAGE (Available Fall, 1986)	250.00	
	SAMPLER KIT (Contains one PROFILE, Answer Sheet, EXAMINER'S MANUAL with Profile Sheets)	4.00	

*Includes copy of EXAMINER'S MANUAL

DISCOUNT RATES: 5-9 packages of *Profiles* or Answer Sheets in the same order, 10%; 10-19 packages, 15%; 20 or more packages, 20%

- Make checks payable to NASSP
- Shipping/handling charges within the U.S. as follows:

Less than $25	$2
$25 - 50	5
50.01 - 75	7
75.01 - 100	8
over $100	8%

Outside the U.S. add $5 or 15%, whichever is greater

- FORTRAN IV Scoring Package (ANSI 77) is for mainframes and mid-size computers
- Microcomputer scoring packages available in 1987
- Commercial scoring available from Standardized Test Scoring, P.O. Box 7604, West Trenton, NJ 08628 (609) 394-9679
- Virginia residents add 4% sales tax
- U.S. currency only
- NASSP is not responsible after 90 days for returns or claims for items not received

SUBTOTAL for items ordered $ _____

4% sales tax (Virginia residents) $ _____

Shipping/Handling (see chart) $ _____

Payment Enclosed TOTAL $ _____

☐ Bill me ☐ MC ☐ Visa

(Only orders over $50)

_____

Account Number Expiration Date

_____

Signature

☐ Check if first order for LSP

NATIONAL ASSOCIATION OF SECONDARY SCHOOL PRINCIPALS
P.O. Box 3250 • Reston, Virginia 22090

Purchase Order No. _____

Name _____

School _____

Address _____

City _____ State _____ Zip _____